

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Currently Amended

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2/19/04 Claim 1 (~~Original~~): A method of cleaning a CVD vacuum vessel which has an electrically conductive partition plate which divides an interior of the vacuum vessel into a plasma generating space and a film-deposition processing space, and in the electrically conductive partition plate there is a plurality of through-holes connecting the plasma generating space to the film-deposition processing space, the method comprising the steps of:

feeding a cleaning gas into the plasma-generating space;

generating active seeds by applying high-frequency electric power to electrodes arranged in the plasma-generating space;

feeding the generated active species into the film-deposition processing space through the plurality of through-holes in the electrically conductive partition plate;

heating said electrically conductive partition plate; and

cleaning the film-deposition processing space by the active seeds which have been fed into this film-deposition processing space.

Claim 2 (Original): The method of claim 1, further comprising the step of maintaining the electrically conductive partition plate at ground potential.

Claim 3 (Canceled)

Claim 4 (Original): The method of claim 1, wherein the cleaning gas is one or more types of fluoride gas.

Claim 5 (Original): The method of claim 4, wherein the fluoride gases are NF_3 , F_2 , SF_6 , CF_4 , C_2F_6 and C_3F_8 .

Claim 6 (Original): The method of claim 1, further comprising the step of adding oxygen gas to the cleaning gas.

Claim 7 (Original): The method of claim 6, wherein an amount of oxygen gas added is such that the concentration is 60% or less.

Claim 8 (Withdrawn): The method of claim 1, wherein the cleaning gas is O_2 .

Claim 9 (Original): The method of claim 1, further comprising the step of adding any of He, Ne, Ar, Kr and Xe to the cleaning gas.

Claim 10 (Currently Amended): The method of claim 1, wherein the heating of said electrically conductive partition plate is carried out within a temperature range which

inhibits the adsorption of fluorine onto an inner circumferential face of the through-holes and the surface of the partition plate.

Claim 11 (Original): The method of claim 10, wherein the cleaning gas is carbon fluoride gas or nitrogen fluoride and the electrically conductive partition plate is heated to 200°C or more.

Claim 12 (Original): The method of claim 10, wherein the cleaning gas is sulfur fluoride gas and the electrically conductive partition plate is heated to 100°C or more.

Claim 13 (Currently Amended): A method of cleaning a CVD system, the CVD system having in which active species are produced by generating plasma inside a vacuum vessel and film is deposited on a substrate accommodated in the vacuum vessel by the active species and material in gas form, wherein said CVD system is configured in such a way that, by providing said vacuum vessel with an electrically conductive partition plate, wherein the interior of said vacuum vessel is divided into a plasma generating space and a film deposition processing space two chambers by said an electrically conductive partition plate, said plate comprising a plurality of through-holes and in the interior of one of said two chambers into which the interior of the vacuum vessel is divided, a plasma generating space in which high frequency electrode is arranged is formed, and in the interior of the other chamber a film deposition processing space in which there is arranged a substrate holding mechanism on which said substrate is mounted is formed, said CVD system is

~~configured in such a way that in said electrically conductive partition plate there is a plurality of through-holes made to pass through said plasma-generating space and said film-deposition processing space, the plurality of through-holes are formed in such a way that where the velocity of gas flow inside said through-holes is u , the effective length of the through-holes is L and the coefficient of mutual gas diffusion is D , the following condition $uL/D > 1$ is fulfilled, and an interior space is formed therein which is divided off from said plasma-forming space and which communicates with said film-deposition processing space via a plurality of diffusion holes, and said material in gas form is supplied to the interior space of said electrically conductive partition plate from the outside and fed into said film-deposition processing space through said plurality of diffusion holes, and said CVD system introduces into said film-deposition processing space, through the plurality of through-holes formed in said partition plate, said active species which are generated in said plasma-generating space by applying high-frequency electric power to said high-frequency electrodes and thus producing a plasma electric discharge in said plasma-generating space,~~

the cleaning method comprising the steps of:

- maintaining the electrically conductive partition plate at ground potential;
- feeding a cleaning gas into the plasma-generating space;
- generating active seeds by applying high-frequency electric power to electrodes arranged in the plasma-generating space;
- feeding the generated active seeds into the film-deposition processing space through the plurality of through-holes in the electrically conductive partition plate;
- heating said electrically conductive partition plate; and

cleaning the film-deposition processing space by the active species which are fed into this film-deposition processing space.

Claim 14 (Canceled)

Claim 15 (Original): The method of claim 13, wherein the cleaning gas is one or more types of fluoride gas.

Claim 16 (Original): The method of claim 15, wherein the fluoride gases are NF_3 , F_2 , SF_6 , CF_4 , C_2F_6 and C_3F_8 .

Claim 17 (Original): The method of claim 13, further comprising the step of adding oxygen gas to the cleaning gas.

Claim 18 (Original): The method of claim 17, wherein an amount of oxygen gas added is such that the concentration is 60% or less.

Claim 19 (Withdrawn): The method of claim 13, wherein the cleaning gas is O_2 .

Claim 20 (Original): The method of claim 13, further comprising the step of adding any of He, Ne, Ar, Kr and Xe to the cleaning gas.

Claim 21 (Original): The method of claim 13, wherein the heating of said electrically conductive partition plate is carried out within a temperature range which inhibits the adsorption of fluorine onto the inner circumferential face of said through-holes and the surface of the partition plate.

Claim 22 (Original): The method of claim 21, wherein the cleaning gas is carbon fluoride gas or nitrogen fluoride and the electrically conductive partition plate is heated to 200°C or more.

Claim 23 (New): A CVD apparatus comprising:

- a vacuum vessel separated into two chambers;

- the first one of the two chambers containing a radio-frequency electrode;

- the second one of the two chamber containing a substrate support mechanism for mounting a substrate;

wherein said vacuum vessel is separated by an electrically conductive partitioning section, said partitioning section comprising:

- a plurality of through-holes to allow communication between the first chamber and the second chamber;

- an interior space for receiving a reactive gas, the interior space separated from the first chamber and communicating with the second chamber through a plurality of diffusion holes; and

- a heater for heating the electrically conductive partition section.

Claim 24 (New): The apparatus of claim 23, further comprising:

an electrically conductive spiral shield; and

wherein the partitioning section is mounted to the vacuum vessel by means of a mounting screw such that electrical contact between the partitioning section and the vacuum vessel is achieved through said spiral shield.